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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/700,553	11/05/2003	Ayako Uji	01272.020640.	1053

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EXAMINER

MRUK, GEOFFREY S

ART UNIT	PAPER NUMBER
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2853

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/700,553	UJI ET AL.	
	Examiner	Art Unit	
	Geoffrey Mruk	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 March 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings received on 12 March 2007 are accepted.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 5-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Bohorquez et al. (US 5,736,995).

With respect to claim 1, Bohorquez discloses an inkjet recording apparatus for performing recording by ejecting ink onto a recording medium (Column 1, lines 38-45) using a plurality of heads (Column 1, lines 55-57 i.e. printhead), the apparatus comprising:

- said heads, each having plurality of heating means to eject the ink (Fig. 1, element 38);
- a common support member (Fig. 3, element 40) on which said plurality of heads are arranged (Column 6, line 31), said common support member conducting heat among said heads (Column 4, lines 46-50);

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- obtaining means (Fig. 3, element 22) for obtaining temperature of a printing head including said common support member and said plurality of heads (Column 4, lines 39-50);
- recording mode setting circuit (Fig. 1, element 36) for setting a head that is to be used for recording in a recording operation based on image data (Fig. 1, element 34) and a head that is not to be used for recording all the way through the recording operation based on the image data (Column 3, lines 4-10 i.e. parallel with printing pulses), from among said plurality of heads; and
- control means (Fig. 1, element 28) for heating not causing ejection (Column 3, line 7 i.e. additional electronics), if the obtained temperature of the printing head unit is in a predetermined range (Column 4, lines 51-59), only the head that is set by said recording mode setting circuit to be not used (Column 3, line 8 i.e. print element heater) for recording to adjust the temperature of the head to be used for recording utilizing heat conduction (Column 3, lines 4-10 i.e. parallel with printing pulses).

The examiner makes of record that Bohorquez discloses temperature control of thermal inkjet printheads where "Heating during the printing swath has been tried by adding additional heating elements or additional electronics to energize the print element heaters in parallel with the printing pulses. This method adds to the cost and complexity of the control and power electronics" (Column 3, lines 6-10). Although this method is not preferred by Bohorquez, "it has been tried" (Column 3, line 6).

With respect to claim 2, Bohorquez discloses said control means (Column 3, line 7 i.e. additional electronics) causes the heating means for the head that is not to be used (Column 3, line 8 i.e. print element heater) for recording to generate heat such that the ink is not ejected from the head (Column 3, lines 4-10 i.e. parallel with printing pulses).

With respect to claim 3, Bohorquez discloses said control means (Column 3, line 7 i.e. additional electronics) causes heating of the head that is not to be used (Column 3, line 8 i.e. print element heater) for recording while the head to be used for recording performs recording (Column 3, lines 4-10 i.e. parallel with printing pulses).

With respect to claim 5, Bohorquez discloses an inkjet recording apparatus for performing recording by ejecting ink onto a recording medium (Column 1, lines 38-45) using a plurality of heads (Column 1, lines 55-57 i.e. printhead), the apparatus comprising:

- said heads, each having a plurality of heating means to eject the ink (Fig. 1, element 38);
- a common support member (Fig. 3, element 40) on which said plurality of heads are arranged (Column 6, line 31), said common support member conducting heat among said heads (Column 4, lines 46-50);
- obtaining means (Fig. 3, element 22) for obtaining temperature of a printing head unit including said common support member and said plurality of heads (Column 4, lines 39-50);
- discrimination means (Fig. 1, element 36) for discriminating between a head that is to be used in a next recording operation based on the image data and a head

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that is not to be used all the way through the next recording operation to be performed based on the image data (Column 3, lines 4-10 i.e. parallel with printing pulses); and

- control means (Fig. 1, element 28) for heating not causing ejection (Column 3, line 7 i.e. additional electronics), if the obtained temperature of the printing head unit is in a predetermined range (Column 4, lines 51-59), only the head that is discriminated by said discrimination means to be not used (Column 3, line 8 i.e. print element heater) before the head discriminated to be used for recording starts the recording operation, to adjust the temperature of the head to be used utilizing heat conduction (Column 3, lines 4-10 i.e. parallel with printing pulses).

With respect to claim 6, Bohorquez discloses a heater for heating provided independently of the heating means is used as said control means (Column 3, lines 4-10 i.e. parallel with printing pulses).

With respect to claim 7, Bohorquez discloses said plurality of heads eject ink of different colors (Column 1, lines 55-57).

With respect to claim 8, Bohorquez discloses wherein before the head (Column 1, lines 55-57) that is set by said recording mode setting circuit (Fig. 1, element 25) to be used for recording is started to be used for recording, if the temperature obtained by said obtaining means is lower than a predetermined temperature, all of said heads are heated not to eject ink (Column 6, lines 17-20), and if the temperature obtained is higher than the predetermined temperature, the head that is set to be used for recording is

stopped being heated and only the head that is set to not be used for recording is continued to be heated (Column 6, lines 27-35).

With respect to claim 9, Bohorquez discloses each of said plurality of heads (Column 1, lines 55-57) has a temperature sensor (Fig. 3, element 22) and said obtaining means obtains an average of outputs (Column 4, lines 46-50) from said temperature sensors as the temperature of said printing head unit.

Response to Arguments

Applicant's arguments filed 12 March 2007 have been fully considered but they are not persuasive. The applicant's argument that "In particular, Bohorquez et al. fails to disclose or suggest at least a recording mode setting circuit for setting a head that is to be used for recording in a recording operation based on image data and a head that is not to be used for recording all the way through the recording operation based on the image data, from among the plurality of heads, and control means for heating not causing ejection, if an obtained temperature of a print head unit is in a predetermined range, only the head that is set to be not used for recording to adjust the temperature of the head to be used for recording utilizing heat conduction, as is recited in independent Claim 1", is not persuasive. However, as stated in the final rejection, Bohorquez discloses "The present invention includes heating the printhead substrate during the printing of a swath by driving the firing chamber resistors with non-firing pulses *synchronized* with the firing pulses. The use of non-nucleating pulses *synchronized* with the printing pulses to control the temperature of the printhead substrate has been

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shown to dramatically improve the print quality of images printed at all operating conditions including the extremes of printhead parameters. By using *synchronized* pulses, significant cost and complexity can be reduced as compared to other controlled temperature systems" (Column 3, lines 36-46).

The applicant's argument that "Nor does Bohorquez et al. disclose or suggest at least discriminating between a head that is to be used in a next recording operation based on image data and a head that is not to be used all the way through the next recording operation based on the image data, and control means for heating not causing ejection, if an obtained temperature of a print head unit is in a predetermined range, only the head that is to be not used before the head discriminated to be used for recording starts the recording operation, to adjust the temperature of the head to be used utilizing heat conduction, as is recited in independent Claim 5", is not persuasive. As stated in the final rejection, Bohorquez discloses "By applying non-nucleating pulses to the heater elements during periods of inactivity the substrate temperature can be controlled. The complexity of the control electronics can be significantly reduced and printhead operation can be improved if the pulses normally used to eject printing drops are reduced in width when used as heating pulses. The print pulses can be extended to the pulse width required to eject a drop when printing is required. By simple control of the pulse width of the non-nucleating pulses the temperature of the substrate can be increased or lowered as required", (Column 5, line 63 – Column 6, line 3). Therefore, Bohorquez meets the claimed limitations.

The examiner notes that applicant's arguments and the claims dated 12 March 2007 have 11/700,553 listed as the application number, which is incorrect. The correct application number is 10/700,553.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is (571) 272-2810. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GSM
5/20/2007

GM



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